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10/626,055	07/23/2003	Khoi Nhu Hoang	6518P002C	1434

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EXAMINER
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LI, SHI K

ART UNIT	PAPER NUMBER
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2613

MAIL DATE	DELIVERY MODE
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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/626,055	<b>Applicant(s)</b> HOANG ET AL.	
	<b>Examiner</b> Shi K. Li	<b>Art Unit</b> 2613	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period **will** apply and **will** expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply **will**, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-11, 13-16, 18-21, 23-27, 30-46, 49-53, 56-60, 62-67, 69-72, 74 and 75 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/26/2008</u> | 6) <input type="checkbox"/> Other: _____  |

Continuation of Disposition of Claims: Claims pending in the application are 1-3,5-11,13-16,18-21,23-27,30-46,49-53,56-60,62-67,69-72,74 and 75.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 26 March 2008 has been entered.

### ***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 37-42, 50-53, 56, 64-67, 69-72 and 74-75 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 37-42, 50-53, 56, 64-67, 69-72 and 74-75 claim a machine-readable medium which can be electrical, optical, acoustical or other form of propagated signals. A signal is not a process because it is not a serial steps; a signal has no physical structure, thus it does not fit within the definition of a machine; a signal is not a matter but a form of energy and therefore it not a composition; and a signal is a form of energy, thus it does not fit the definition of manufacture.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 1-3, 5-11, 13-16, 18-21, 23-27, 30-46, 49-53, 56-60, 62-67, 69-72 and 74-75 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "wherein each service level topology is a network topology smaller than the physical network topology". However, it is unclear how to determine whether one topology is smaller or bigger than another topology.

Independent claims 7, 14, 18, 24, 31, 37, 43, 50, 57, 64 and 71 recite similar limitations.

***Claim Rejections - 35 USC § 103***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1-3, 5-8, 14-15, 18-20, 23-27, 31-32, 34-38, 40-46, 49-53, 56 and 71-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Golmie et al. (N. Golmie et al., "A Differentiated Optical Services Model for WDM Networks", IEEE Communications Magazine, February 2000) in view of Jukan et al. (A. Jukan et al., "Constraint-based Path Selection Methods for On-demand Provisioning in WDM Networks", IEEE INFOCOM 2002, 23-27 June 2002) and Desnoyers et al. (U.S. Patent 6,791,948 B1).

Regarding claims 1, 14, 18 and 31, Golmie et al. teaches in FIG. 3 and Table 1 to divide a WDM network into separate service levels. The difference between Golmie et al. and the claimed invention is that Golmie et al. does not teach how to determine service level topology. Jukan et al. teaches on page 827 left col. continuity constraints. Jukan et al. teaches on page 831 right col. distributed discovery of wavelength paths by each access node. One of ordinary skill in the art would have been motivated to combine the teaching of Jukan et al. with the WDM

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network of Golmie et al. because the method of Jukan et al. allow automatic discovery of network topology in a mesh network. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the decentralized network topology discovery method, as taught by Jukan et al., in the WDM network of Golmie et al.

The combination of Golmie et al. and Jukan et al. still fails to teach to use available wavelength for determining network topology. However, it is obvious to one of ordinary skill in the art that the method of Jukan et al. can be used to discovered network topology. For example, Desnoyers et al. teaches in col. 2, lines 56-65 to use request message to discover network topology. For network topology discovery, one of ordinary skill in the art would have used all available wavelengths instead of the idle wavelengths. One of ordinary skill in the art would have been motivated to combine the teaching of Desnoyers et al. with the modified WDM network of Golmie et al. and Jukan et al. because using request message requires less processing power and information storage capacity as compared with conventional method such as OSPF. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the probing method of Jukan et al. for topology discovery as suggested by Desnoyers et al. because using request message requires less processing power and information storage capacity as compared with conventional method such as OSPF.

Regarding claim 2, 19 and 32, Golmie et al. teaches in Table 1 BER.

Regarding claim 3, the modified method of Golmie et al., Jukan et al. and Desnoyers et al. determines service level network topology.

Regarding claims 5-6 and 15, Jukan et al. teaches on page 827, left col. wavelength continuity constraints.

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Regarding claim 7, Desnoyers et al. teaches in col. 19, lines that the same method can be used for determine changes for maintaining network topology.

Regarding claim 8, Golmie et al. teaches in Table 1 BER and other service level parameters.

Regarding claim 20 and 23, Jukan et al. teaches on page 828, left col. service-specific wavelength set.

Regarding claim 24, Desnoyers et al. teaches in FIG. 2 network topology database 33.

Regarding claim 25, Golmie et al. teaches in Table 1 BER and other service level parameters.

Regarding claims 26-27, the modified method of Golmie et al., Jukan et al. and Desnoyers et al. determines service level network topology.

Regarding claim 34, Jukan et al. teaches comparing service-specific wavelength sets.

Regarding claims 35-36, the modified method of Golmie et al., Jukan et al. and Desnoyers et al. determines service level network topology by sending message to find reachable paths.

Regarding claim 37, Desnoyers et al. teaches in FIG. 2 processor and system memory. It is well known to one of ordinary skill in the art that instructions for controlling the processor can be stored in memory.

Regarding claim 38, Golmie et al. teaches in Table 1 BER and other service level parameters.

Regarding claim 40, Jukan et al. teaches comparing service-specific wavelength sets.

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Regarding claims 41-42, the modified method of Golmie et al., Jukan et al. and Desnoyers et al. determines service level network topology by sending message to find reachable paths.

Regarding claims 43-46, Jukan et al. teaches real-time path setup.

Regarding claim 49, Jukan et al. teaches on page 827, left col. wavelength continuity constraints.

Regarding claim 50, Desnoyers et al. teaches in FIG. 2 processor and system memory. It is well known to one of ordinary skill in the art that instructions for controlling the processor can be stored in memory.

Regarding claims 51-53, Jukan et al. teaches real-time path setup.

Regarding claim 56, Jukan et al. teaches on page 827, left col. wavelength continuity constraints.

Regarding claims 71-72, Desnoyers et al. teaches in FIG. 2 network topology database 33.

7. Claims 9, 33, 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Golmie et al., Jukan et al. and Desnoyers et al. as applied to claims 1-3, 5-8, 14-15, 18-20, 23-27, 31-32, 34-38, 40-46, 49-53, 56 and 71-72 above, and further in view of Lang et al. (Lang et al., "Link Management Protocol", draft-ietf-mppls-lmp-02.txt, 2001).

Golmie et al., Jukan et al. and Desnoyers et al. have been discussed above in regard to claims 1-3, 5-8, 14-15, 18-20, 23-27, 31-32, 34-38, 40-46, 49-53, 56 and 71-72. The difference between Golmie et al., Jukan et al. and Desnoyers et al. and the claimed invention is that Golmie et al., Jukan et al. and Desnoyers et al. do not teach link management protocol. Link



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management protocol is well known in the art for tracking link status of links between adjacent nodes. Lang et al. teaches the details of a link management protocol (LMP). One of ordinary skill in the art would have been motivated to combine the teaching of Lang et al. with the modified WDM network of Golmie et al., Jukan et al. and Desnoyers et al. because LMP provides verification, link property correlation and fault management functions for managing links. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use LMP for managing links, as taught by Lang et al., in the modified WDM network of Golmie et al., Jukan et al. and Desnoyers et al. because LMP provides verification, link property correlation and fault management functions for managing links.

8. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Golmie et al., Jukan et al. and Desnoyers et al. as applied to claims 1-3, 5-8, 14-15, 18-20, 23-27, 31-32, 34-38, 40-46, 49-53, 56 and 71-72 above, and further in view of Okajima et al. (U.S. Patent Application Pub. 2002/0120766 A1).

Golmie et al., Jukan et al. and Desnoyers et al. have been discussed above in regard to claims 1-3, 5-8, 14-15, 18-20, 23-27, 31-32, 34-38, 40-46, 49-53, 56 and 71-72. The difference between Golmie et al., Jukan et al. and Desnoyers et al. and the claimed invention is that Golmie et al., Jukan et al. and Desnoyers et al. do not teach comparing parameters of links with service level parameters. Okajima et al. further teaches in FIG. 5 to monitor variable link metrics to determine whether link metrics have been changed and update link metrics accordingly. One of ordinary skill in the art would have been motivated to combine the teaching of Okajima et al. with the modified WDM network of Golmie et al., Jukan et al. and Desnoyers et al. because a link must meet service level criteria for providing the associated QoS. Thus it would have been

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obvious to one of ordinary skill in the art at the time the invention was made to compare link parameters with classification criteria, as taught by Okajima et al., in the modified WDM network of Golmie et al., Jukan et al. and Desnoyers et al. because a link must meet service level criteria for providing the associated QoS.

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Golmie et al., Jukan et al. and Desnoyers et al. as applied to claims 1-3, 5-8, 14-15, 18-20, 23-27, 31-32, 34-38, 40-46, 49-53, 56 and 71-72 above, and further in view of Matsuura et al. (U.S. Patent Application Pub. 2003/0198227 A1).

Golmie et al., Jukan et al. and Desnoyers et al. have been discussed above in regard to claims 1-3, 5-8, 14-15, 18-20, 23-27, 31-32, 34-38, 40-46, 49-53, 56 and 71-72. The difference between Golmie et al., Jukan et al. and Desnoyers et al. and the claimed invention is that Golmie et al., Jukan et al. and Desnoyers et al. do not teach to use number of wavelength conversion as criteria. Matsuura et al. teaches in paragraphs [0014] and [0017] that wavelength conversion devices are expensive and the number of wavelength conversion is kept to a minimum in setting up a lightpath. One of ordinary skill in the art would have been motivated to combine the teaching of Matsuura et al. with the modified WDM network of Golmie et al., Jukan et al. and Desnoyers et al. to limit the number of wavelength conversion used because wavelength conversion devices are expensive and a OXC can have only limited number of wavelength conversion devices to be shared for all lightpaths. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use number of wavelength conversions as a criteria for service level, as taught by Matsuura et al., in the modified WDM network of Golmie et al., Jukan et al. and Desnoyers et al. to limit the number of wavelength

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conversions used because wavelength conversion devices are expensive and a OXC can have only limited number of wavelength conversion devices to be shared for all lightpaths.

10. Claims 16 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Golmie et al., Jukan et al. and Desnoyers et al. as applied to claims 1-3, 5-8, 14-15, 18-20, 23-27, 31-32, 34-38, 40-46, 49-53, 56 and 71-72 above, and further in view of Battou et al. (U.S. Patent 7,013,084 B2).

Golmie et al., Jukan et al. and Desnoyers et al. have been discussed above in regard to claims 1-3, 5-8, 14-15, 18-20, 23-27, 31-32, 34-38, 40-46, 49-53, 56 and 71-72. The difference between Golmie et al., Jukan et al. and Desnoyers et al. and the claimed invention is that Golmie et al., Jukan et al. and Desnoyers et al. do not teach a centralized network management server. Battou et al. teaches in FIG. 30 network management system (NMS) for managing a network. Battou et al. teaches in FIG. 34 topology manager of NMS for providing a topological view of the network. One of ordinary skill in the art would have been motivated to combine the teaching of Battou et al. with the modified WDM network of Golmie et al., Jukan et al. and Desnoyers et al. because a NMS provides a topological view of the network to craftsperson for operation and maintenance. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a NMS, as taught by Battou et al., in the modified WDM network of Golmie et al., Jukan et al. and Desnoyers et al. because a NMS provides a topological view of the network to craftsperson for operation and maintenance.

11. Claims 30 and 57-60, 62-67, 69-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Golmie et al., Jukan et al. and Desnoyers et al. as applied to claims 1-3, 5-8,

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14-15, 18-20, 23-27, 31-32, 34-38, 40-46, 49-53, 56 and 71-72 above, and further in view of Melaku et al. (U.S. Patent Application Pub. 2003/0074443 A1).

Golmie et al., Jukan et al. and Desnoyers et al. have been discussed above in regard to claims 1-3, 5-8, 14-15, 18-20, 23-27, 31-32, 34-38, 40-46, 49-53, 56 and 71-72. The difference between Golmie et al., Jukan et al. and Desnoyers et al. and the claimed invention is that Golmie et al., Jukan et al. and Desnoyers et al. do not teach to change service level. Melaku et al. teaches in FIG. 5 QoS broker for handling service level change request. Melaku et al. teaches in paragraph. [0056] that if a user decides to change QoS requirements in the midst of a session, new resources are to be reallocated and a new path that meets the requested QoS is established. One of ordinary skill in the art would have been motivated to combine the teaching of Melaku et al. with the modified WDM network of Golmie et al., Jukan et al. and Desnoyers et al. because a QoS broker allows users to change service level depending on changes of their application needs. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a QoS broker for handling service level change requests, as taught by Melaku et al., in the modified WDM network of Golmie et al., Jukan et al. and Desnoyers et al. because a QoS broker allows users to change service level depending on changes of their application needs.

12. Claims 74-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Golmie et al., Jukan et al. and Desnoyers et al. as applied to claims 1-3, 5-8, 14-15, 18-20, 23-27, 31-32, 34-38, 40-46, 49-53, 56 and 71-72 above, and further in view of Deo ("Graph Theory with Applications to Engineering and Computer Science" by N. Deo, Prentice-Hall, 1974, pp. 137-144).

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Golmie et al., Jukan et al. and Desnoyers et al. have been discussed above in regard to claims 1-3, 5-8, 14-15, 18-20, 23-27, 31-32, 34-38, 40-46, 49-53, 56 and 71-72. The difference between Golmie et al., Jukan et al. and Desnoyers et al. and the claimed invention is that Golmie et al., Jukan et al. and Desnoyers et al. do not teach to use a table or a tree to represent service level topology. Networks are mathematically represented as graphs. Deo teaches in chapter 7 to represent graphs as matrix (or table). One of ordinary skill in the art would have been motivated to combine the teaching of Deo with the modified machine-readable medium of Golmie et al., Jukan et al. and Desnoyers et al. to represent network as matrix because matrices are better for computer processing. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to represent service level topology structures as table, as taught by Deo, in the modified machine-readable medium of Golmie et al., Jukan et al. and Desnoyers et al.

### ***Response to Arguments***

13. Applicant's arguments with respect to claims 1-3, 5-11, 13-16, 18-21, 23-27, 30-46, 49-53, 56-60, 62-67, 69-72 and 74-75 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (7:30 a.m. - 4:30 p.m.).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

skl

7 June 2008

/Shi K. Li/

Primary Examiner, Art Unit 2613